

MV2RAM

USER'S INFORMATION MANUAL

REVISION 2.1

NOTE: ALL OF CLEARPOINT'S PRODUCTS ARE TESTED PRIOR TO SHIPMENT; FAILURES IN THE FIELD ARE LARGELY ATTRIBUTED TO COMPONENT FAILURE CAUSED BY HANDLING. PLEASE VERIFY THAT ALL NECESSARY PRECAUTIONS ARE TAKEN DURING INSTALLATION, SPECIFICALLY PROTECTION FROM ELECTRO-STATIC DISCHARGE (ESD).

CHAPTER 1

GENERAL DESCRIPTION AND SPECIFICATIONS

1.1 INTRODUCTION

This manual supplies user information for the MV2RAM family of memory modules. MV2RAM modules provide high density, low cost per bit storage for Digital Equipment Corporation's MicroVAX II systems. Two (MV2RAM/2MB), four (MV2RAM/4MB) and eight (MV2RAM/8) megabyte versions are available in the Quad wide configuration. An 8MB version is also available in a Dual width version. All quad wide units use 256K Dynamic RAM technology on a single quad height module with the 8MB card utilizing "ZIP" (Zig-zag Interconnecting Pin) 256K DRAM technology. Dual wide MV2RAM /8MB uses 1MB DRAMS. Bit per byte parity generation, storage and detection are contained "on board" for full compatibility (hardware/software) with the MicroVAX II and VAX2000.

There are no configuration jumpers on the MV2RAM; automatic configuration is performed via backplane slot positioning. The MicroVAX II backplane has two slots dedicated to memory, located directly behind the processor. An additional 1 megabyte of RAM storage resides on the processor module, which accounts for a total memory capacity of 9 megabytes when using 4MB cards. The on-board CPU RAM is automatically relocated as the highest megabyte. This 1MB of RAM on the CPU is disabled when using 2 8MB cards for a maximum system memory of 16 megabytes. Modules may be mixed and matched for desired memory configuration.

GENERAL DESCRIPTION AND SPECIFICATIONS

1.2 SPECIFICATIONS

CHARACTERISTICS

memory device type
data width
operating temperature
storage temperature
relative humidity
voltages required

SPECIFICATIONS

NMOS dynamic RAM
32 bits + 4 Parity
0 to +65 C
-40 to +85 C
0 to 90(non-condensing)
+5V +/-5

1.2.1 POWER CONSUMPTION - MV2RAM FAMILY OF PRODUCTS

	MV2RAM/2MB	MV2RAM/4MB	QUAD MV2RAM/8MB	DUAL MV2RAM/8MB
+5V operating (typical)	1.25 Amp	1.5 Amp	2.0 Amp	1.0 Amp
+5V standby (typical)	1.00 Amp	1.25 Amp	1.75 Amp	.75 Amp

CHAPTER 2

HARDWARE INSPECTION AND INSTALLATION

2.1 INSTALLATION PROCEDURE

The following procedure should be followed when a MV2RAM board is received:

1. Visually inspect the module to make sure that it has arrived in good condition.
2. Power down the system. Make sure that the system is powered off before plugging in the module.
3. If your system is the floorstand model, (BA23) remove the back panel.
4. If your system is the World cabinet, (BA123) remove the right side panel.
5. Locate the processor module marked M7606; the two slots behind the processor are reserved for memory.
6. Install MV2RAM module(s). Install the memory in the first available slot after the processor. It will be necessary to remove grant continuity modules (M9047) prior to installation of the memory board.
7. Attach the 50 pin flat ribbon cable extending from the processor module, to each of the memory modules.

Clearpoint offers 50 pin replacement cables. Order number: MV50-3

HARDWARE INSPECTION AND INSTALLATION

8. Install system panels and power up the system.
9. Run memory diagnostics (diagnostics are provided with each system).
 1. Show configuration; ensure the correct amount of megabytes are present (remember, the CPU has one megabyte also).
 2. Test memory.

CHAPTER 3

DIAGNOSTICS

3.1 MICROVAX DIAGNOSTIC OVERVIEW

Your MicroVAX II system is supplied with a set of RX50 floppy disc diagnostics (MVII DIAGNOSTICS CUST RX50 n). According to your system configuration, one or more of these diagnostics pertain to you.

Write protect your hard disk and remove tape cartridges, etc., prior to running diagnostics to prevent overwriting. Install the RX50 disc prior to "power on" or depress the "restart" switch to begin diagnostics.

DIAGNOSTICS

3.2 SAMPLE DIAGNOSTIC PRINTOUT

The following printouts are samples of the MicroVAX II running with a MV2RAM/2MB, a MV2RAM/4MB, and an MV2RAM/8MB module. Auto boot occurs as a result of the diagnostics diskette being in the drive at power-up.

User Instructions are written in brackets ([]).

<CR> denotes carriage return.

POWER-UP PRINTOUT:

```
KA630-A.V1.2
Performing normal system tests.
 7..6..5..4..3..
Tests completed.

Loading system software.
 2..

MicroVAX Maintenance System - MDM Version 1.02

                CONFIDENTIAL DIAGNOSTIC SOFTWARE
                  PROPERTY OF
                DIGITAL EQUIPMENT CORPORATION

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                Right-to-use License
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Current date and time is: 17-NOV-1858 00:00:00.65

[Press RETURN key to continue OR enter new date and
time, then press RETURN]
key.]:

(DD-MMM-YYYY HH:MM): <CR>
```

DIAGNOSTICS

SAMPLE DIAGNOSTIC:

TEST NUMBER 1. (For 2MB and 4MB memory board.)

SCREEN 1:

```
[Press the RETURN key to return to the previous menu.]
MAIN MENU
  1 - Test the system
  2 - Show system configuration and devices
  3 - Display the Utilities Menu
  4 - Display the Service Menu
  5 - Exit MicroVAX Maintenance System
[Type the number, then press the RETURN key.]: 2<CR>
```

TEST NUMBER 1 (continued)

SCREEN 2:

```
SYSTEM CONFIGURATION AND DEVICES
CPUA ... MicroVAX CPU
      KA630-AA 1MB, PPU M00 H00
MEMA ... MicroVAX memory system
      7 megabytes. 14336 Pages.
      KA630 ... CPU module, 1MB on-board memory.*1
      MS630-BA ... Quad height memory module, 2MB.*2
      MS630-BB ... Quad height memory module, 4MB.*3
RQDXA ... Winchester/floppy disk cntroller.
      Revisions =10 and 6
      RD53 ... Winchester Disk drive.
      RX50 ... Floppy disk drive.
           ... Cannot identify drive, Offline,
TK50A ... Cartridge Tape Controller
DHV11A ... 8 line asynchronous multiplexer
      ROM REV 11 9
[Press the RETURN key to return to the previous menu.] <CR>
```

*1 CPU memory	1MB
*2 MV2RAM/2MB	2MB
*3 MV2RAM/4MB	4MB

TOTAL	7MB

DIAGNOSTICS

SAMPLE DIAGNOSTIC:

ALTERNATE TEST NUMBER 1 (For 8MB memory board.)

SCREEN 1:

```
[Press the RETURN key to return to the previous menu.]
MAIN MENU
  1 - Test the system
  2 - Show system configuration and devices
  3 - Display the Utilities Menu
  4 - Display the Service Menu
  5 - Exit MicroVAX Maintenance System
[Type the number, then press the RETURN key.]: 2<CR>
```

ALTERNATE TEST NUMBER 1. (continued)

SCREEN 2:

```
SYSTEM CONFIGURATION AND DEVICES
CPUA ... MicroVAX CPU
      KA630-AA 1MB, PPU M00 H00
MEMA ... MicroVAX memory system
      16 megabytes. 32768 Pages.
      KA630 ... CPU module, 1MB disabled.
      MS630-CA ... Quad height memory module, 8MB.*1
      MS630-CA ... Quad height memory module, 8MB.*2
RQDXA ... Winchester/floppy disk cntroller.
      Revisions =10 and 6
      RD53 ... Winchester Disk drive.
      RX50 ... Floppy disk drive.
           ... Cannot identify drive, Offline,
TK50A ... Cartridge Tape Controller
DHV11A ... 8 line asynchronous multiplexer
ROM REV 11 9
[Press the RETURN key to return to the previous menu.] <CR>
```

CPU memory	1MB	... Disabled
*1 MV2RAM/8MB	8MB	
*2 MV2RAM/8MB	8MB	

TOTAL	16MB	

DIAGNOSTICS

TEST NUMBER 2

SCREEN 1:

MAIN MENU

- 1 - Test the system
- 2 - Show system configuration and devices
- 3 - Display the Utilities Menu
- 4 - Display the Service Menu
- 5 - Exit MicroVAX Maintenance System

[Type the number, then press the RETURN key]: 1<CR>

TEST NUMBER 2 (continued)

SCREEN 2:

SYSTEM TEST

This is a test of the MicroVAX computer and its devices.
No preparation for this testing is required; the MicroVAX
is ready to be tested.

Testing occurs in two parts: the functional tests quickly
tests each device sequentially; the exerciser test (lasting
about 4 minutes) tests how the devices work together.

To halt the test at any time and return to the Main Menu,
type ^C by holding down the CTRL key and pressing the C key.

[Press the RETURN key to begin testing, OR type 0 and return to
the Main Menu.]: <CR>

DIAGNOSTICS

TEST NUMBER 2 (continued)

SCREEN 3:

```
CPUA .....passed
MEMA .....passed
RQDXA.....passed
TK50A .....passed
DHV11A .....passed
```

```
CPUA started by MDM
MEMA started by MDM
RQDXA started by MDM
TK50A started by MDM
DHV11A started by MDM
```

MDM started all enabled diagnostics

```
CPUA ended with no errors
DHV11A ended with no errors
RQDXA ended with no errors
TK50A ended with no errors
MEMA ended with no errors
```

SYSTEM TEST PASSED

All devices passed functional tests and the system passed the exerciser test.

At this point you may exit from the maintenance system or perform more specialized testing. If you would like additional information, consult the Maintenance Section of your System Technical Manual.

[Press the RETURN key to return to the previous menu.]: > *

ALL TESTS ARE NOW COMPLETE.

CHAPTER 4

HELP AND REPAIR

4.1 CUSTOMER SERVICE

Clearpoint offers a 24-hour before/repair replacement on all its products and a **LIFETIME WARRANTY** on parts and workmanship. Clearpoint is not responsible for product that has been mishandled or used in an inappropriate manner.

Return of all product must be accompanied by a **RETURN AUTHORIZATION NUMBER**. To receive this authorization number, call Clearpoint's Customer Service Department.

Call toll free in the United States (outside Mass.) **1-800-CLEARPT** (1-800 -253-2778). Outside of the United States or within Massachusetts, call 617- 435-5395, or 617-478-7794.

The following information will be needed in order to properly process your request:

1. Clearpoint Part Number : _____
2. Configuration (memory size) : _____
3. Serial Number : _____
4. Revision Number : _____
5. Reason for Return : _____
6. Return ship to address : _____
7. Bill to Address : _____
8. Purchase/Sales Order Number : _____
9. CPU : _____
10. Operating System : _____
11. Other Peripherals : _____
- : _____
- : _____
- : _____
- : _____
- : _____

APPENDIX A

SETTING VMS FOR MAXIMUM MEMORY CONFIGURATION

To ensure that VMS will see the maximum memory configuration in your system please execute the following procedure(s):

```
$set def sys$system:[sysexec]
```

```
$edit modparams.dat
```

Modparams text:

```
physicalpages = 262144
```

```
CONTROL Z  
EXIT
```

```
$@sys$update:auto gen savparams reboot
```

APPENDIX B

SYSGEN - SETTING VMS FOR MAXIMUM MEMORY CONFIGURATION:

The following procedure will enable VMS to access newly installed memories:

1. Login as the System level user

The dollar sign prompt will appear

2. Type the following:

```
SET DEF SYS$SYSTEM
```

```
RUN SYSGEN
```

The Sysgen prompt will appear (SYSGEN>). type the following:

```
SYSGEN> USE CURRENT
```

```
SYSGEN> SHOW PHYSICALPAGES The following will appear:
```

<u>PARAMETERS</u>	<u>CURRENT</u>	<u>DEFAULT</u>	<u>MIN</u>	<u>MAX</u>	<u>UNIT</u>	<u>DYNAMIC</u>
	262144					

(The current value should not be less than 2048/Mb. The correct value is calculated 2048 X xMB installed. 32786 is the correct value for 16Mb)

SYSGEN - SETTING VMS FOR MAXIMUM MEMORY CONFIGURATION:

TO CHANGE THE PHYSICAL PAGE SIZES:

SYSGEN>

SYSGEN> SET PHYSICALPAGES xxxxxx
(use correct value from formula above)

SYSGEN> WRITE CURRENT (do this ONLY if you make a change)

SYSGEN> EXIT

\$ @SYS\$UPDATE:AUTOGEN SAVEPARAMS REBOOT

APPENDIX C

VMS STATUS INFORMATION

The following is an explanation of the status reading from the execution of command: "SHOW MEM/PHYS".

When 10MB to 16MB of MicroVAX II memory is installed in the MicroVAX II, MicroVMS versions 4.1 and 4.2 will show inaccurate system status information under the "Bad Pages" heading. This is not correct as all diagnostics will run without error. It is an error in the status information. To confirm this fact, execute the following command sequence:

1. Login as **SYSTEM**
2. type: **ANALYZE/SYSTEM**
3. type: **SHOW PFN/BAD**

The following display will appear:

Bad Page List

Count: 0
Lolimit: -1
High Limit: XXX

PFN	PTE ADDRESS	BAK	REFCNT	FLINK	BLINK	TYPE	STATE
-----	-------------	-----	--------	-------	-------	------	-------

***List is empty. THIS display is a more accurate indication of error occurrence. It shows no errors, therefore there are none.

APPENDIX D

PIN ASSIGNMENTS - J1 CONNECTOR

PIN NUMBER	SIGNAL NAME	PIN NUMBER	SIGNAL NAME
1	GROUND	2	BDATA31
3	BDATA30	4	BDATA29
5	BDATA28	6	GROUND
7	BDATA26	8	BDATA27
9	BDATA24	10	BDATA25
11	BDATA22	12	BDATA23
13	GROUND	14	BDATA21
15	BDATA20	16	BDATA19
17	BDATA18	18	BDATA17
19	B3ERR L	20	GROUND
21	RECEIVE L	22	BDATA22
23	1TRANSMIT L	24	B2ERR L
25	GROUND	26	GROUND
27	BOERR L	28	OTRANSMIT L
29	BDATA16	30	GROUND
31	GROUND	32	B1ERR L
33	BDATA14	34	BDATA13
35	BDATA12	36	BDATA11
37	BDATA10	38	GROUND
39	BDATA09	40	BDATA08
41	BDATA05	42	BDATA03
43	BDATA04	44	BDATA06
45	GROUND	46	BDATA07
47	BDATA02	48	BDATA01
49	BDATA00	50	GROUND

APPENDIX E

PIN ASSIGNMENTS - A1/A2 B1/B2 C1/C2 D1/D2

A1	A2	C1	C2
AJ1 - GND	AA2 - +5V	CB1 - BCB2	CA2 - +5V
AM1 - GND	AC2 - GND	CD1 - RASA	CB2 - NCB1
AT1 - GND	AM2 - BIAKI L	CE1 - CAS3	CC2 - GND
	AM2 - BIAKO L	CF1 - PCF2	CD2 - NCD1
	AR2 - BDMGI L	CH1 - CAS2	CE2 - CAS3
	AS2 - BDMGO L	CJ1 - SIZE	CH2 - CAS2
		CK1 - WRT	CJ2 - NCJ1
		CL1 - RASB	CK2 - WRT
		CM1 - PCM2	CL2 - NCL1
		CN1 - ADR2	CM2 - NCM1
		CP1 - ADR1	CN2 - ADR2
		CR1 - ADRO	CP2 - ADR1
		CS1 - ADR8	CR2 - ADRO
		CT1 - GND	CS2 - ADR8
		CU1 - PCU2	CT2 - NDT2
B1	B2		
BJ1 - GND	BA2 - +5V		
BM1 - GND	BC2 - GND		
BT1 - GND			
BV1 - +5V			

PIN ASSIGNMENTS - A1/A2 B1/B2 C1/C2 D1/D2

APPENDIX E (CONTINUED)

PIN ASSIGNMENTS A1/A2 B1/B2 C1/C2 D1/D2

D1	D2
DA1 - NDC1	DA2 - +5V
DB1 - ADR3	DB2 - ADR3
DC1 - SELECT	DC2 - GND
DD1 - ADR6	DD2 - ADR6
DE1 - ADR5	DE2 - ADR5
DF1 - ADR4	DF2 - ADR4
DH1 - ADR7	DH2 - ADR7
DJ1 - PDJ2	DL2 - NDL1
DK1 - PDK2	DP2 - CAS1
DL1 - RASC	DR2 - CAS0
DM1 - PDM2	DS2 - NDS1
DN1 - PDN2	DT2 - PCT2
DP1 - CAS1	DU2 - NDU1
DR1 - CAS0	
DS1 - PDS2	
DT1 - GND	
DU1 - RASD	